pool via Spanish ports, with 7 immigrants; August 9, provisional flag steamship *Tomas Brooks*, from Kingston, Jamaica, with 23 immigrants. Total, 42.

Respectfully,

R. H. VON EZDORF,
*Assistant Surgeon, U. S. M. H. S.*

The SURGEON-GENERAL,
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ENGLAND.

*Report of the British Congress on Tuberculosis.*

OFFICE OF MEDICAL OFFICER IN COMMAND,
MARINE-HOSPITAL SERVICE,
*London, England.*

SIR: I have the honor to make the following report of the British Congress on Tuberculosis, held in this city from July 22 to July 26, 1901, inclusive, and to which I was appointed a delegate.

*Opening of the congress.*

The congress was opened by a general session on the afternoon of July 22, the Duke of Cambridge occupying the chair on behalf of His Majesty the King. The delegates and members of the congress were welcomed by the various bodies of the city, and 1 delegate from each country responded. The further meetings of the congress were divided into 4 sections, to meet each morning as follows: Section 1, State and municipal; section 2, medical, including climatology and sanatoria; section 3, pathology, including bacteriology; section 4, veterinary. In addition, on each afternoon of the congress, a general meeting was held and an address delivered on some topic of common interest to the whole congress. Various forms of social diversion were provided during the week, including garden parties, receptions, and a dinner to the foreign delegates.

*Professor Koch's address on tuberculosis.*

The first general meeting on July 23 was addressed by Professor Koch, of Berlin, his subject being, "The fight against tuberculosis in the light of the experience that has been gained in the successful combat of other infectious diseases." He said that since the discovery of the bacillus of tuberculosis it was evident that tuberculosis was a preventable disease, and in combating it as such it would draw valuable lessons from our experience in other pestilences, for we had learned that every disease must be treated individually and measures adopted according to its special nature and etiology. An illustration of this principle is plague, where formerly the patient was considered in the highest degree a center of infection, but now only patients with plague-pneumonia are so regarded, and we know that the chief source of contagion are the rats affected with plague, and effective work could be done in exterminating rats, otherwise the chief etiological factor is not touched. Cholera offers another example, for here the chief propagator of contagion is the water, and so the water is the first thing to be considered. Hydrophobia is also instructive, for while inoculations are curative, they are not preventive of infection, and the only real way of combating this pestilence is by compulsory muzzling. Lastly, leprosy is closely akin to tuberculosis, and like it only spreads from man to man by close contact, so to combat

it it is necessary to prevent close communication of the well and sick, and so isolation is adopted.

In by far the majority of cases of tuberculosis the disease has its seat in the lungs, and has also begun there. From this it is justly concluded that the germs of the disease—that is, the tubercle bacilli must have got into the lungs by inhalation. As to the question where the inhaled tubercle bacilli have come from there is also no doubt; on the contrary, we know with certainty that they get into the air with the sputum of consumptive patients. This sputum, especially in advanced cases of the disease, almost always contains tubercle bacilli, sometimes in incredible quantities; by coughing and even speaking, it is flung into the air in little drops—that is, in a moist condition, and can at once infect persons who happen to be near the coughers, but it may also be pulverized when dried in the linen or on the floor, for instance, and get into the air in the form of dust.

The bacilli may get into other organs in the same way, but rarely. Transmission by heredity is extremely rare.

It is generally assumed that another source of infection exists in the transmission of germs from animal to man, but investigations by him have led to a contrary conclusion. Experiments were conducted by feeding tubercular-free young cattle and swine with tuberculous material from bovine and human sources, with the result that from bovine sources the animals became infected, while from human sources they remained free, and the conclusion would seem to be that human tuberculosis differs from bovine and can not be transmitted to cattle. But more important is the question as to whether bovine tuberculosis can be communicated to man, but this is impossible of absolute demonstration. As large quantities of butter and milk are consumed containing bacilli, it would seem that many cases of tuberculous affections should be caused, but from the examination of a large number of post-mortem reports, it was found that primary intestinal tuberculosis was extremely rare even in children in whom it ought to be most common.

"Though the important question whether man is susceptible to bovine tuberculosis at all is not yet absolutely decided, and will not admit of absolute decision to-day or to-morrow, one is nevertheless already at liberty to say that if such a susceptibility really exists the infection of human beings is but a very rare occurrence. I should estimate the extent of the infection by the milk and flesh of tuberculous cattle and the butter made of their milk as hardly greater than that of hereditary transmission, and I, therefore, do not deem it advisable to take any measures against it."

The main source of infection in tuberculosis is, therefore, the sputum of patients, and to prevent this infection is our first object. Isolation is impracticable and also unnecessary. If proper precautions are taken no infection need occur, but this is difficult among the poor where there is overcrowding, bad ventilation, and often whole families are thus infected. Therefore, the first indication is to improve the social condition of the poor, and, secondly, to provide consumptive hospitals where patients in the later stages may obtain treatment gratis, and where the patient would be willing to go. England is the only country having any great number of such institutions, and the diminution of consumption in this country is probably due in a large measure to this reason. Another measure especially valuable is compulsory notification, which not only shows the number of tuberculous persons, but also where they reside, and, therefore, where disinfection and instruction are necessary. Disinfection is of the greatest importance, not only of rooms and houses,

but also of infected bedding and clothing. Education of the public is of great benefit, for it has already done much to limit infection.

On the other hand, for treatment, are the sanatoria, which have lately come into vogue, and can cure a certain number in the early stages of the disease. This number is small, however, in comparison with the whole number of infected persons, and its value should not be overestimated.

"And now, in conclusion, to glance back once more to what has been done hitherto for the combating of tuberculosis, and forward to what has still to be done, we are at liberty to declare, with a certain satisfaction, that very promising beginnings have already been made. Among these I reckon the consumption hospitals of England, the legal regulations regarding notification in Norway and Saxony, the organization created by Biggs in New York, the sanatoria, and the instruction of the people. All that is necessary is to go on developing these beginnings, to test and, if possible, to increase their influence on the diminution of tuberculosis, and wherever nothing has yet been done to pursue similar measures."

*Discussion of Professor Koch's address.*

It is needless to say that this address has given much ground for discussion throughout the congress. Lord Lister remarked that it would be a serious and grievous thing if it should lead to any relaxation of the efforts being made at present to provide a pure milk supply, and it should turn out that these views of Professor Koch were erroneous. He cited the instance of smallpox and cowpox and stated that while smallpox could not often be inoculated from man to cows, it was possible to inoculate monkeys from man and afterwards cows from the monkeys, and we now know that the two diseases are identical He further said that he agreed with the speaker that further investigation was desirable. Professors Nocard, Bangs, and Sims Woodhead all agreed with Lord Lister.

*Professor Brouardel's address.*

The third general meeting was addressed by Professor Brouardel, of Paris, on "The measures adopted by different nations for the prevention of consumption." He pointed out the havoc that was caused by this disease and the slowness in recognizing its dangers until its infectiveness was proven by Willemin and Koch. Before this England had recognized the dangers arising from damp and dark dwellings and seventy years ago began the crusade for healthy dwellings. The grounds of prevention in all countries are identical—that is, that tuberculosis is preventable and curable. First comes legislation and the education of public opinion. Pamphlets are issued for the information of the public in England by the National Association for the Prevention of Consumption, and in Germany societies were founded for building sanatoria and popularizing sanitary ideas. Belgium has a national league against tuberculosis. Norway has voted money for the printing of a popular work on tuberculosis. In France they have collected together those who can teach, and popular lectures are given, and on every hand societies for the prevention of tuberculosis are springing up. This year 88 lectures on tuberculosis had been given to 12,000 pupils. Thus gradually in all countries the public are beginning to realize that personal care and cleanliness are necessary to obviate contagion, and are also realizing that other idea to my mind equally important, that a consumptive patient is only dangerous if

the necessary precautions are not taken around him, and if he himself does not take them to protect his relatives, friends, and fellow-workmen from contagion. The great danger is spitting, and once this disgusting habit has been suppressed, consumption will decrease rapidly. In the United States the habit is against the law, and in Sydney, New South Wales, a fine of £1 is imposed for spitting in the streets. The sputum is not dangerous if put in antiseptic receptacles, or if thrown in dry and well-lighted places it soon loses its dangerous properties; thus, more victims occur in dark and ill-ventilated houses, for here it retains its virulence a long time. Thus the importance of healthy dwellings becomes plain, and is recognized by various countries, notably England, which has several acts dealing with workmen's dwellings, and model dwellings are largely built. In Germany also an effort is being made in this direction. Belgium is also one of the most enthusiastic countries in taking up this subject, but in Denmark building societies have flourished best of all. In France also something has been done in this direction, and all authors agree that mortality is lower in these healthy houses and in the town in which they are built. Bad quarters exist in all towns, which are a hotbed of tuberculosis, and these must be found and demolished. Alcohol is another potent cause of tuberculosis, and it has been shown that the death rate is higher from this disease in the different classes of society in proportion to the amount of alcohol consumed. In scrofulous children and those reared in unhealthy dwellings the duty is to build up the body. For this purpose there are established in France and Italy and other countries, sanatoria at the seaside for such children, with good results. France has 14 such institutions that accommodate more than 2,000 children a year.

Prevention also follows the line of food, and the inspection of meat is in this direction. However, the great danger here is in the private slaughterhouses where no inspection occurs. In milk the danger is in tuberculous mastitis and here the danger can only be recognized by examination of the udders. In England it is a noticeable fact that while the deaths from tuberculosis have decreased 45 per cent in the last fifty years the deaths in children have increased 47 per cent, which is attributed to the increase of abdominal tuberculosis due to milk. Strict inspection measures are adopted in Norway, Sweden, and Denmark.

Coming to the curability of tuberculosis, we know it is curable in all stages, but especially in early stages, as is abundantly shown by post-mortem examination and the finding of cicatrices of all sizes in the lungs. For this object come dispensaries where the patient can obtain treatment in the earlier stages and receive instruction regarding measures of hygiene and feeding, and if necessary be sent later to a sanatorium. In Germany there are polyclinics for tuberculosis, in the large towns, where the patient can be treated throughout the illness or till sent to a sanatorium, and a committee connected with it looks after the patient at home, tells his wife what to do, and sees that the house is kept clean, and, as far as possible, relieves the poverty caused by the breadwinner's illness by means of a bank kept for such purposes.

The same idea was first carried out in France by Chalmette, but he went further in going and seeking out the consumptive and inviting him to come to the dispensary, and he has established a dispensary on these lines at Lille, and several others have been founded on similar lines in various parts of France.

Some patients must be sent to sanatoria, and here the principles are rest, moral and physical, stuffing, and the open-air treatment. In Ger-

many this system is carried out most enthusiastically, and there are 83 sanatoria opened already or ready to open which can accommodate 12,000 patients each year. They have been built by local insurance, by sickness banks, by the manufacturers who have combined to found sanatoria for their work-people, by parishes which have united for the purpose. There are more of the latter. In some parts a tax of from 1d. a head has been exacted. The state has also founded several sanatoria for its servants. Patients remain three months, and it is thought advisable that they return for a month's treatment the next year. The results seem satisfactory, for from 46 to 60 per cent of those who leave were able to work. Germany's example has been followed by England, Scotland, Australia, Canada, Austria, and America, also in Russia, Sweden, Denmark, Norway, Italy, and the Netherlands sanatoria are building, and in France several sanatoria have been opened. In the United States, also, wards are assigned in hospitals for the exclusive use of consumptives. From an international standpoint, it would seem that consumption can not be treated as plague and the other pestilences, but much can be done by disinfection of railroad carriages, steamboats, and hotels. In the United States hotel keepers are obliged to notify the authorities if they receive a consumptive patient, and disinfection of the room so occupied is compulsory. The minister of the interior in Germany has brought in even more stringent measures. Every doctor who attends a case of pulmonary or laryngeal tuberculosis is bound to report it in writing to the police as soon as he has made his diagnosis. After death from tuberculosis the room in which the patient has died has to be disinfected and also his belongings. Hotel proprietors, furnished housekeepers, asylums, and other public institutions are compelled to notify at once every case of tuberculous disease which arrives in their establishments.

*Professor McFadyean's address.*

The fourth general meeting was addressed by Prof. John McFadyean, of the Royal Veterinary College, his subject being "Tubercle bacilli in cow's milk as a possible source of tuberculous disease in man." He said that until a few days before he had not thought he would have to argue the question as to the identity of human and bovine tuberculosis, but Professor Koch's address made this necessary. He thought Professor Koch's train of reasoning appeared to be the following:

First. That the bacilli found in cases of bovine tuberculosis were much more virulent for cattle and other domestic quadrupeds than the bacilli found in cases of human tuberculosis.

Second. That this difference was so marked and so constant that it might be relied on as a means of distinguishing bacilli of bovine tuberculosis from those of the human disease, even assuming that the former might occasionally be found as a cause of the disease in man.

Third. That if bovine bacilli were capable of causing the disease in man, there were abundant opportunities for the transference of bacilli from the one species to the other, and cases of primary intestinal tuberculosis from the consumption of tuberculous milk ought to be of common occurrence, but post-mortem examination of human beings proved that cases of primary intestinal tuberculosis were extremely rare in man, and, therefore, it must be concluded that the human subject was immuned against infection with the bovine bacilli, or was so slightly susceptible that it was not necessary to take any steps to counteract the risk of infection in this way.

He thought one of these premises was ill founded and the others had

little or no bearing on the subject, and that reasonable ground remained for regarding tnberculous milk as distinctly dangerous to man. He argued that even if bovine bacilli were more virulent to cattle, and that human bacillus has little virulence, the opposite did not follow, and the probability was all the other way, for it was known that those bacteria that were common to all the domesticated animals were also pathogenic to man. As for infection from cattle to man, he quoted the post-mortem records from the hospital for sick children in London and the Royal Hospital for sick children in Edinburgh. Out of 547 cases of tuberculosis, the proportion of primary infection through the intestine was found at the former institution to be $29\frac{1}{10}$ and the latter $28\frac{1}{10}$ per cent. He hence submitted that there was strong prima facie evidence that animals were a possible source of human tuberculosis. He thought the diseased cows were only dangerous when the udders were affected, for it was estimated that 30 per cent of the milk cows in England were tuberculous, and only about 2.2 per cent had the udder affected. In the latter class, the milk often contained large quantities of the bacilli and the danger was greater because in the early stage such udders were quite painless and no change showed in the character of the milk. Another source of contamination of milk that could not be lost sight of was dust and dirt. As a remedy, he thought the tuberculin test impracticable, because too expensive and too disturbing to the cattle industries. He, therefore, recommended periodical inspections at brief intervals by competent inspectors. He supported also the compulsory notification of udder disease and of symptoms of tuberculosis in milked cows and the interdiction of the sale of milk from any animal suffering from tuberculous disease of the udder, or exhibiting clinical signs of tuberculosis.

*Dr. Biggs on "The notification of tuberculosis."*

In the section of State and municipal Dr. Biggs, of New York, presented a paper on "The notification of tuberculosis," dealing mainly with New York City, but he also mentioned that notification was also compulsory in Michigan, Buffalo, and Philadelphia. New York was the first to pass such a law in 1893, but the compulsory notification was not complete, physicians in private practice only being invited to notify. Sputum was examined free of charge and at the end of the third year 8,000 specimens per year were examined. Efforts were made to disinfect premises in which death from tuberculosis had occurred. In 1897 it was resolved by the board of health of New York that tuberculosis being a dangerous and contagious disease, every physician should report in writing as to patients suffering from that disease within one week of being called in, and a sum was appropriated for the care of poor tuberculous patients. This resolution was not strictly enforced as regards private patients, but public opinion was gradually decreasing the number of cases not notified. In consequence of these measures and the better treatment of consumptives, there has been a decrease of 30 per cent in mortality arising from tuberculosis.

*Alderman Macdougall's paper on voluntary notification.*

Alderman Macdougall, of Manchester, read a paper on the working of the voluntary system of notification in that city. At first it was restricted to institutions, but later, in 1900, private physicians were invited to notify, in order that—first, the assistant medical officers might visit the homes of patients and instruct the household in the precautionary measures to be adopted, leaving with them printed instructions. Second, that the nature of measures of disinfection required

might be determined. Third, that they should make inquiries into the exposure to infection of individual cases from relatives, work mates, friends, etc., and into their occupations and places of work, the various houses which they had inhabited, their physique, personal habits, etc. Fourth, that supervision might be maintained over infected households, change of address ascertained, personal precautions and household cleanliness maintained, and necessary measures of disinfection carried out from time to time. Fifth, that it might be ascertained if the required measures of disinfection were being executed. Sixth, that assistance might be given in getting bacteriological examination of sputum in suitable cases. Seventh, that information regarding households might be obtained to serve as a basis for hospital provision.

The number of cases notified from September, 1899, to March 31, 1901, had been 2,338, and of these 1,701 had been in institutions and 638 in private practice. In addition to disinfection and cleansings, notes were made of centers of infection.

Dr. M. Holmboe said that in Norway notification was limited to pulmonary tuberculosis and tuberculosis of the skin and urinary organ that could be positively diagnosed. Deaths from tuberculosis must be reported and the premises be disinfected. He thought compulsory notification was necessary to give authorities power to enforce sanitary orders. Various other members expressed their opinion, all being in favor of some form of notification, and the following resolution was passed: "That the voluntary notification of cases of phthisis attended with tuberculous expectoration and the increased preventive action which it has rendered practicable has been attended by a promising measure of success, and that the extension of notification should be encouraged in all districts in which sufficient sanitary ministration renders it practicable to adopt the consequential measures."

*Prevention of tuberculosis in childhood.*

Two papers on the prevention of tuberculosis during childhood were presented. One by Dr. Leon Petit, of Paris, reporting the establishment of dispensaries for children in that city and the good that had resulted. Dr. Knopf, of New York, read a paper on the State and individual prophylaxis of tuberculosis during childhood, advocating the separation of consumptives and children and the doing away of many habits tending to infect children, such as kissing and the tasting of food.

*The influence of houses and aggregation.*

Under the "Influence of houses and aggregation," Dr. Coates, of Manchester, reported experiments made with dust from various localities. In 23 specimens taken from dirty and infected houses, 66 per cent proved infective. In 10 clean but infected houses 50 per cent proved infective, and from the waiting room of a large consumptive hospital and a large general hospital the results were negative, but specimens from a railroad waiting room gave positive results in 2 cases. For disinfection he recommended the use of a solution of chlorinated lime, 1½ ounces to a gallon. Walls, ceilings, and floors, and all suitable articles of furniture were to be thoroughly washed with this several times. Clothing and bedding should be steamed, and wall paper in clean houses and with no sputum attached might be cleaned with bread dough.

Various members spoke of spittoons, and the general opinion seemed in favor of some form of combustible receptacle contained in a metal or porcelain carrier.

*Control of meat and milk supplies.*

Mr. Shirley Murphy opened a discussion on the control of meat supplies. He said there was very little new to be said on the subject. He gave a review of the measures adopted in England for the prevention of the sale of tuberculous meat, but added that there was always the possibility of a tuberculous animal being slaughtered under conditions avoiding inspection. Other speakers spoke in the same vein.

In the discussion of milk supplies, nearly every speaker took occasion to disagree with Professor Koch, and to express the opinion that tuberculous milk was dangerous to man as a food. Professor Delapine thought no animal could be declared free of tuberculosis unless the tuberculin test had been applied.

*Sanatoria.*

In opening a discussion on the provision of sanatoria, Sir James Creighton-Browne said that sanatoria were needed for two reasons, first to cure those affected in curable cases, and second that incurable cases might be removed so as not to be a source of infection as well as having a life prolonged and the comforts necessary to their condition. It was held that the tendency to spontaneous cures were what made sanatoria so necessary, and it ought to be brought within the limit of all classes. He thought there ought to be three classes of sanatoria, first, for the affluent; second, for the competent, and third, for the poor.

*Climatology.*

In opening a discussion on climatology, Dr. Theodore Williams said that in whatever climate the patient was treated the great object was to get him into the open air and to live under the most favorable hygienic conditions. The climate that best fulfills the open-air treatment need not be a very warm or a very cold one, but should be dry and stimulating, and with abundant sunshine, admitting of much exercise and producing nervous and muscular vigor. Climates might be classified as, first, marine climates, including sea voyages; second, mountainous climates, partly inland, partly marine, and third, mountainous climates. Under marine climates are the south coast stations of England and Ireland having an equable temperature and a good deal of wind with considerable rain and many rainy days. They were suitable for chronic cases and especially the strumous forms. Sea voyages were going out of vogue, partly at least, because steamers made the trip too short, and also because of the disadvantages of the close cabin and the lack of exercise and also because other methods of treatment had come into use.

Under dry warm climates are, first, the desert, giving dryness and warmth, sunshine and great radiation with the consequent great variation of day and night temperature, and the asepticity of the atmosphere. In experience these climates produce a diminution of secretion and improvement and quiescence, but seldom absolute arrest. Second, comes the warm dry climate of the Mediterranean Basin. It is cooler and more stimulating than the desert and clearer and with less fog and rain than the English-coast stations, and the cool nights are especially advantageous.

Mountainous climates are characterized by: First, diathermancy; second, asepticity, and third, by the physiological effects on the body, tanning the skin, at first quickening, then slowing the circulation, and fuller respiration accompanied by dilatation of the thorax. He gave statistics of 385 cases treated in high altitudes in various places, the

treatment averaging eleven and a half months. The results were that 173 or 45 per cent completely recovered, 77 or 20 per cent greatly improved, and 54 or 14 per cent improved, so that in all 334 improved. His conclusions as regards the effects of the high altitude on consumption are, first, that the respiration of the rarified atmosphere produces hypertrophy of the healthy lung and local pulmonary emphysema around the tuberculous lesion, giving rise in due time to thoracic enlargement; second, that it is possible the arrest of tuberculous disease is at least partly due to the pressure exercised on the tuberculous masses by the increasing bulk of the surrounding lung tissue, which, by emptying the blood vessels, promotes caseation and cretefaction of the tubercle; third, that these changes are accompanied by general improvement in digestion and assimilation, the cessation of all symptoms of disease, the return of normal functions by gain of weight, of color, of nervous and muscular activity, and of respiratory and circulatory power; fourth, that arrest of disease takes place in 58 per cent of tuberculization cases and great improvement in 87 per cent; that in excavation cases arrest occurs in 21 per cent, and great improvement in 61 per cent; fifth, that the climate is especially beneficial in hemorrhagic phthisis and phthisis in which hereditary predisposition is strongly marked, and is well suited to chronic tuberculosis of the lungs in general; sixth, that males and females seem to do equally well and to profit most between the ages of 20 and 30, and seventh, that the climate is contraindicated in acute phthisis, catarrhal phthisis in laryngeal phthisis, in cases of phthisis accompanied by great nervous irritability, in cases of double cavities with fibroid phthisis and in all patients whose pulmonary surface has been so much reduced from any cause that it does not suffice for complete respiratory purposes.

Dr. Burney Yeo followed on much the same lines, the objects of treatment by climate being, he stated, to arrest catarrhal conditions of the air passages, to improve nervous and circulatory tone, to increase the activity of the digestive functions and thus stimulating nutrition by promoting the desire and increasing the power to exercise, to raise the moral tone by affording a clear, bright, and cheerful environment, and to diminish by its asepticity bacteriological activity.

In conclusion, he stated that a suitable climate relieves or removes catarrhal conditions accompanying the disease in a number of cases; it raises nervous and vascular tone, it increases muscular energy and the ability as well as the desire for exercise; by rendering an open-air life possible, it increases the aëration of the lungs and diminishes the activity of bacterial agencies. It improves the tone and promotes the activity of the digestive functions.

In regard to suitable climate, he said that cases treated at the commencement of the disease, and who were otherwise in good health, may be permitted a certain amount of latitude in the choice of climate. Second, for progressive febrile cases, repose in bed or on the couch at home is the best condition practicable for the free access of air and sunshine. Third, for catarrhal cases, soothing climates like Madeira or Teneriffe are best. Fourth, for rheumatic or gouty cases of the fibroid type, dry marine climates or the desert are most suitable.

*Use of tuberculin.*

The discussion regarding the therapeutic and diagnostic value of tuberculin was opened by Dr. Heron, who gave a short history of it, and thought it had fallen into disuse owing to its frequent use in unsuitable cases, its administration in too large doses, neglect of the rule that a

dose should never be given until the patient's temperature has been normal for the previous twenty four hours at least, neglect of the rule that the dose of tuberculin should never be increased, but rather diminished, when its administration has been followed by a rise of temperature, and the prejudice raised against the remedy among both medical men and patients, because of the severity of the symptoms which not seldom follow upon its use. Of 51 cases treated by him, 17 were lost sight of, and of the remaining 34, 16 were known to be well. Lupus did well up to a certain point and then relapsed. One case of lupus treated by the new tuberculin recovered permanently. Tuberculin was now known to be worse than useless in cases of mixed infection. For diagnosis, tuberculin was most valuable, making very early diagnosis possible, when the chances of recovery were best.

Professor Koch said that if the diagnostic injections were properly made in the human subject, it was a valuable method and without danger. The injections should be small enough in weak subjects; not more than $\frac{1}{10}$ mm. was enough to begin with, and no second injection should be given until the temperature was again normal. If the first injection gave a faint reaction a second injection of the same quantity frequently gave a very marked reaction. Over 3.000 cases had come under his observation, and he concluded that the diagnostic test of tuberculin was almost absolute. As a therapeutic agent he had no doubt it was of great value in early uncomplicated cases, and when used in these cases a complete cure frequently resulted. In advanced cases it was necessary that the temperature should be normal before the injections began. The treatment should be continued over a long period, if necessary, with intervals of three or four months, until they gave no reaction. In answer to a question, Professor Koch said the tuberculin was prepared from tubercle bacilli of human origin, but that the reaction was produced in both man and cattle, and though the baccilli were different they possessed a common "group" reaction.

Many members spoke for and against the use of tuberculin, but most were agreed that its diagnostic value was great and harmless, but opinion was much divided on the curative qualities.

*Discussion on sanatoria.*

In opening the discussion on sanatoria, Dr. Clifford Allbutt said that open-air treatment was possible at home, but was best carried out in sanatoria and had been perfected there. The coldest air possible was the best stimulant for the appetite and made forced feeding unnecessary, but it varied for different individuals. What a young man could stand was too cold for an old or a weak one. Two degrees of cure were possible in sanatoria, arrest or oblescence; but the latter was hardly possible with the poor, requiriug on the average two winters and one summer; so an economic cure was to be aimed at rather than absolute cure. Six months would be required in the majority of cases. He protested against the emptiness of mind advocated by some reformers and would give amusement and tranquil occupation.

Dr. Philiip, as a result of ten years' experience, said that each case must be treated per se; rest and exercise must be considered together and regulated by the temperature and the pulse; a full dietary was necessary, but not forced feeding. The location of the sanatorium was not dependent upon the surroundings or ground; it could not be too far from the large centers of population, and it was better if patients were treated in their native air.

Dr. Burton-Fanning presented a report of the sanatorium treatment in England, covering 716 patients from sanatoria where patients paid their way. As a result, 92 per cent gained weight; quiescence or definite recovery occurred in 25.1 per cent; of patients without fever or quickened pulse, 63.6 had quiescence or recovery.

*The Röntgen ray in tuberculosis.*

In discussing the use of the Röntgen ray in the diagnosis of pulmonary tuberculosis, Dr. Walsham said that in normal lungs they were quite transparent from apex to base, with the exception of a few ill-defined shadowy lines to the right of the heart. The movement of the diaphragm like a piston up and down was ordinarily equal on the two sides of the chest, but in disease was much less on the affected side, even when the disease was limited to one apex. In well-developed cases of tuberculosis the diseased areas showed as flocculent shadows punctate in parts. He would say that the rays could not decide the earliest stage of tuberculosis in the lungs, but they would definitely show tuberculosis, and that at a very early stage.

*The tubercle bacillus.*

Dr. Alfred Moeller, of Belzig, in opening the discussion of the morphological and physiological variations of the bacillus of tuberculosis and its relation to other bacteria resistant to acids and to the streptothrices, said that he had shown that bacteria which were acid fast were not necessarily tubercle bacilli, as, for instance, the smegma bacillus and the bacillus of avian tuberculosis. A series of bacilli resembling the tubercle bacillus had recently been found, including the butter bacillus and the Timothy bacillus. The tubercle bacilli, like all the acid fast bacilli, seemed to belong to the streptothriciæ.

*Resolutions adopted by the congress.*

The last general meeting was held on the afternoon of July 26 and the following resolutions were adopted:

1. That tuberculous sputum is the main agent for the conveyance of the virus of tuberculosis from man to man. Indiscriminate spitting should, therefore, be suppressed.
2. That it is the opinion of this congress that all public hospitals and dispensaries should present every out-patient suffering from phthisis with a leaflet containing instructions with regard to the prevention of consumption, and should supply and insist on the proper use of a pocket spittoon.
3. That the voluntary notification of cases of phthisis attended with tuberculous expectoration and the increased preventive action which it has rendered practicable has been attended by a promising measure of success, and that the extension of notification should be encouraged in all districts in which efficient sanitary administration renders it possible to adopt the consequential measures.
4. That the provision of sanatoria is an indispensable part of the means necessary for the diminution of consumption.
5. In the opinion of this congress, in the light of the work that has been presented at its sittings, medical officers of health should continue to use all the powers at their disposal and relax no efforts to prevent the spread of tuberculosis by milk and meat.
6. That in view of the doubts thrown on the identity of human and

bovine tuberculosis, it is expedient that the government be approached and requested to institute an immediate inquiry into this question, which is of vital importance to the public health and of great consequence to the agricultural industry.

7. That the educational work of the great national societies for the prevention of tuberculosis, is deserving of every encouragement and support; it is through their agency that a rational public opinion may be formed, the duties of public health officers made easier to perform, and such local and State legislation as may be required called into existence.

8. That this congress is of the opinion that a permanent international committee should be appointed to collect evidence and report on the measures that have been adopted for the prevention of tuberculosis in different countries, to publish a popular statement of these measures, to keep and publish periodically a record of scientific research in relation to tuberculosis, and to consider and recommend measures of prevention. This congress is further of opinion that such a committee should consist of representatives to be elected by the great national societies formed for the suppression of tuberculosis and also representatives nominated by various governments. It is further of the opinion that all international committees and great national societies whose object is the prevention of tuberculosis should be invited to cooperate.

9. In the opinion of this congress, overcrowding, defective ventilation, damp general unsanitary condition in the houses of the working classes, diminish the chance of curing consumption and aid in predisposing and spreading the disease.

10. That while recognizing the great importance of sanatoria in combating with tuberculosis in countries, the attention of governments should be directed towards informing charitable and philanthropic individuals and societies of the necessity for antituberculous dispensaries as the best means of checking tuberculous disease among the industrial and indigent classes.

Respectfully,

A. R. THOMAS,
*Passed Assistant Surgeon, U. S. M. H. S.*

The SURGEON-GENERAL,
*U. S. Marine-Hospital Service.*

## GERMANY.

*Report from Berlin—Plague in various countries.*

BERLIN, GERMANY, *August 19, 1901.*

SIR: I have the honor to transmit the following information obtained from the imperial health office at Berlin:

*Plague.*

EGYPT.—During the period from July 26 to August 2, 2 fresh cases of plague occurred at Zagazig In Port Said also 2 plague cases were registered. The total number of plague cases recorded since April 7 amount to 101, with 42 deaths.

BRITISH INDIA.—During the week ended July 12, in the Bombay Presidency, 1,447 plague cases were recorded, with 1,105 deaths—that is to say, 56 cases and 121 deaths more than in the foregoing week. In the city of Bombay, during the week ended July 13, 78 fresh cases of plague and 79 deaths were officially registered. Besides these, 166 deaths were designated as suspected plague. The total number of